

# Drug Testing Analysis and Toxicology Reports Explained

By: Kelly Dobbins, Mid-South Drug Testing, Inc.

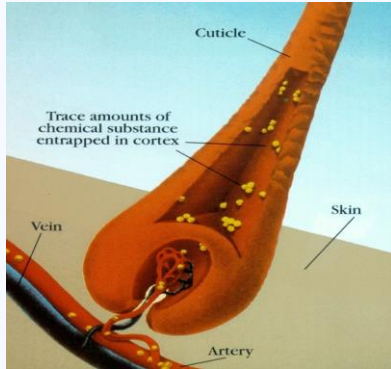
CLE for TN Court Improvement Program

## OUTLINE

1. Hair "follicle" drug testing
2. Urine drug testing
3. Nail "bed" drug testing
4. Natural vs. Synthetic Opiates
5. DCS testing
6. Sample hair test results and CCF
7. Flawed or contaminated hair samples

# HAIR TESTS EXPLAINED

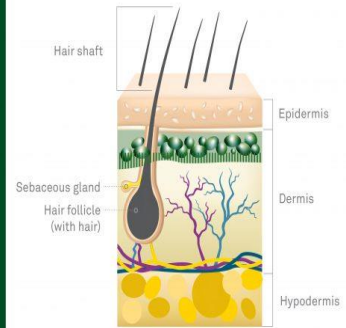
IS CALLING A HAIR TEST A HAIR "FOLLICLE" WRONG? THE FOLLICLE IS BELOW THE SCALP MEANING A COLLECTOR WOULD HAVE TO PULL THE HAIR STRAND IN ORDER TO GET THE FOLLICLE.



COLLECTORS ARE TRAINED TO CUT THE HAIR AS CLOSE TO THE SCALP AS THEY CAN WITHOUT CAUSING ANY PAIN TO THE DONOR.

## Myth busted

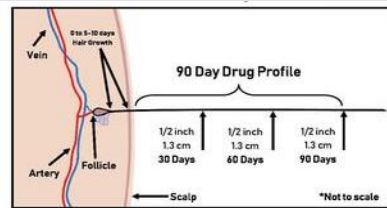
Sometimes incorrectly referred to as "hair follicle testing," hair is actually cut from the shaft and not plucked to collect the follicle.



# HAIR TEST TIMEFRAME

The picture to your right is from Omega Laboratories website. It explains how long hair must be in order to go back a certain amount of time. This picture also explains their different methods and turnaround times.

We have an account with multiple different hair labs however, Omega and ExperTox are our main ones. We tend to use Omega more due to having a faster turnaround time.



The typical hair test uses a 1.5 inch (1.3 cm) segment of head hair collected from close to the scalp. Since the average growth rate of human head hair is approximately 1/2 inch (1.3 cm) per month, a typical hair test covers an approximately 90 day time frame.

## Comparison of Drug Testing Methods

	Urine Testing	Oral Fluid Testing	Hair Testing
<b>Window of Detection</b>	12 hours - 3 Days <i>(THC up to 30 days)</i>	Minutes - 2 Days	1 week - 3 Months
<b>Laboratory Turnaround</b>	1-2 Days	1-3 Days	1-3 Days
<b>Adulteration</b>	Commonly available	Difficult to adulterate	Difficult to adulterate
<b>Collection Difficulty</b>	Invasive, special facilities required	Non-invasive	Non-invasive
<b>Best Use</b>	Post Accident, For Cause	Post Accident, For Cause, Random	Pre-Employment, Random

# Urine Drug Testing

## PROTOCOLS & PROCEDURES

Starting under DOT Rule 49 CFR Part 40 Section 40.61, there are certain steps that collectors must take in order to do a urine collection correctly. The link below gives in depth information and examples of everything regarding a urine collection.

<https://www.transportation.gov/odapc/part40/40-63>

## URINE TEST TIMEFRAME

There are two types of urine test- instant and lab based.

Instant tests use a dipstick to give a reading within 4 minutes. The result is either negative or non-negative, which then must be sent to the lab for confirmation.

Lab based tests are what most companies and courts ask for because of how many more drugs can be added on. Most negative tests can come back in 24-48 hours, however, those who take prescriptions or show up positive will take a few days longer.

**Drug Testing Nail: The Benefits Over Hair**

**Did You Know:** Nail is keratinized protein very similar to hair. It is porous and compounds become entrapped and bind within the structure.

The average hair is about 100 microns in diameter, while the average nail is about 400 microns in thickness. So a hair has 50 microns of radius to diffuse drug & drug metabolites while a nail specimen offers up to 4-8x's the diffusion distance.

**4x's**

100 microns  
100 microns  
100 microns  
100 microns

400 microns

**Drug is incorporated into the nail at the origin and along the nail bed.**

The nail clipping contains the entire drug history of the growth of the nail. Some drugs have been shown to remain in the nail for as long as 6 months.

**Both hair and nail collection procedures are non-intrusive to the donor's privacy, but nail offers a few additional benefits:**

- Nail collection is a donor collected sample. The donor simply clips their nails in front of a trained observer and places the clippings in a foil tray.
- Issues that can affect hair testing, such as chemical treatments and hair pigmentation, do not effect nail specimens.
- Multiple nail collections over long periods of time have minimal impact on the donor's appearance. Hair must be cut close to the scalp, meaning that multiple collections can leave numerous uneven areas of hair growth.

**Range of Detection**

Nail and hair specimens can be tested for the same drug & drug metabolites.

**1g=1,000,000,000,000 pg**

*We know how much is riding on what we do. We confirm all positives, so you can be sure of valid scientific results.*

Initial Test	Confirmation	New Cut-off (ng/ml)
Marijuana	THCA	0.05
Barbiturates	Butalbital	200
	Amobarb	200
	Pentobarb	200
	Secobarb	200
	Phenobarb	200
Benzodiazepines	Alprazolam	100
	Diazepam	100
	Nordiazepam	100
	Oxazepam	100
	Temazepam	100
Methadones	Misazolam	100
	EDDP	100
Propoxyphenes	Methadone	100
	Norpropoxyphene	200
Tramadol	Propoxyphene	100
	Tramadol	500
Meperidine	Tramadol	500
	Normeperidine	500

USDTL  
U.S. DOT | 800.235.2367 | 1700 S. Mount Prospect Rd. | Des Plaines, IL | 60018

# Nail "Bed" drug testing

?????

# OPIATES

## Difference Between an Opioid and an Opiate



An **OPIATE** is a drug naturally derived from the opium poppy plant. On the other hand, **OPIOID** is any compound attached to opioid receptors that can be partially or fully synthetic.

- Opiates are a subset of Opioids
- Not all Opioids are Opiates

Opioids	Opiates
Vicodin Percocet Oxycodone Fentanyl etc.	Opium Morphine Heroin Codeine etc.

ANR

<https://anrclinic.com/>

## NATURAL VS. SYNTHETIC

Naturally occurring opiates that are covered on all our hair test are Codeine, Morphine, and Heroin.

Non natural opiates that we can test for include Oxycodone, Oxymorphone, Hydrocodone, Hydromorphone, and Fentanyl.

The other drugs listed to the left can be tested, but do not come on any of our standard panels.

## DCS hair testing

Picogram per milliliter

Picogram (pg) and milligram (mg) are units of weight used in metric system.

1 picogram (pg) = 0.000000001 milligram (mg)

# SAMPLE HAIR RESULT & CCF

**OMEGA LABORATORY**

Requesting Agency: On-Site Drug Screening  
 1515 Main Street  
 Merrillville, IN 46451-2710  
 Telephone: 301-472-1331

Specimen ID: 5283557  
 Reason For Test: Other  
 Date Collected: 01/28/2021  
 Date Received: 01/28/2021  
 Date Reported: 02/01/2021

Client: [REDACTED] SSN: [REDACTED]

**Tested (Prepackaged) Hair 5 Drug Panel & Extended Opiate**  
 The Hair 5 Drug Panel & Extended Opiate is a qualitative test for the presence of the following substances in hair: Amphetamine, Methamphetamine, Cocaine, Marijuana, and Opiate. The test is performed on a hair sample that is at least 1.5 cm long and is free of any external contamination.

**Hair 5 Drug Panel & Extended Opiate Test Result: Positive**  
 A positive result indicates that the drug was detected at a level equal to or greater than the above stated cutoff and was confirmed by the method stated below.

Drugs Tested For	Result	Screening Cutoff	Screening Method	Confirmation Method	Confirmation Cutoff	Quantitative Result
Amphetamine	Positive	500 pg/mg	ELISA	GC/MS	500 pg/mg	1101 pg/mg
Methamphetamine	Positive	500 pg/mg	ELISA	GC/MS	500 pg/mg	5589 pg/mg
Marijuana	Positive	500 pg/mg	ELISA	GC/MS	500 pg/mg	5589 pg/mg
Cocaine	Positive	500 pg/mg	ELISA	GC/MS	500 pg/mg	5589 pg/mg
Oxycodone	Positive	200 pg/mg	ELISA	GC/MS	200 pg/mg	5589 pg/mg
Extended Opiates	Positive	200 pg/mg	ELISA	GC/MS	200 pg/mg	5589 pg/mg
Phenylephrine	Positive	200 pg/mg	ELISA	GC/MS	200 pg/mg	5589 pg/mg
Tricaine Methane	Positive	1.00 pg/mg	ELISA	GC/MS	1.00 pg/mg	5589 pg/mg

Order # or Receipt #  
 1.00 (Receipt #) (0.00) - (Receipt #)

**REPORT NOTATIONS**

Certified By: Pam M. Miro  
 Test Vials: 4132023 13  
 Page: 1 of 1

Request Report Vials on: 03-11-2018

Omega Laboratory, Inc., 1401 N. Cleveland Ave., (Mesa, AZ) 85203  
 Omega Laboratory, Inc., 1401 N. Cleveland Ave., (Mesa, AZ) 85203  
 Omega Laboratory, Inc., 1401 N. Cleveland Ave., (Mesa, AZ) 85203

**NON-FEDERAL DRUG TESTING CUSTODY AND CONTROL FORM**

5283557

STEP 1 - COMPLETED BY COLLECTION OR EMPLOYEE REPRESENTATIVE

A. Requesting Agency, ID No.  
 950 N. Main Street, Suite 101  
 Merrillville, IN 46451  
 TEL: 301-472-1331  
 FAX: 301-472-1331

B. MFC Name, Address, Phone  
 [REDACTED]

C. Collector Name  
 [REDACTED]

D. Reason for Test:  Pre-employment  Post-employment  Random  Retention  Return to Work  Other (Specify)

E. Drug Tests to be Performed:  Hair 5 Drug Panel  Hair 10 Drug Panel  Other (Specify)

F. Collection Site Address  
 950 N. Main Street, Suite 101  
 Merrillville, IN 46451  
 TEL: 301-472-1331  
 FAX: 301-472-1331

STEP 2 - COMPLETED BY COLLECTION

1.  Unemployed  Employed (Specify Employer)

STEP 3 - Complete address and all other information on this form. (Do not leave blank)

STEP 4 - **DO NOT WRITE IN THIS SECTION FOR LABORATORY USE ONLY**

RECEIVED AT LAB:  Yes  No (If No, One Reason Below)

REASON FOR RECEIVING:  Requested by Employer  Requested by Employee  Other (Specify)

DATE RECEIVED: [REDACTED]

LABORATORY REMARKS

STEP 5 - **COMPLETED BY COLLECTOR**

1.  Unemployed  Employed (Specify Employer)

STEP 6 - **DO NOT WRITE IN THIS SECTION FOR LABORATORY USE ONLY**

RECEIVED AT LAB:  Yes  No (If No, One Reason Below)

REASON FOR RECEIVING:  Requested by Employer  Requested by Employee  Other (Specify)

DATE RECEIVED: [REDACTED]

HAIR POUCH SEAL

5283557

**HAIR POUCH SEAL**  
 PLEASE PLACE SEAL OVER FLAP ON HAIR SPECIMEN POUCH

Form 100 - REV 1/16 COPY © LAMLABORATORY.COM

Flawed or contaminated hair samples

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# Contact Us



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**FACEBOOK**  
[@MIDSOUTHDRUGTESTINGINC](#)



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